

AMENDMENTS TO THE CLAIMS

Claims 1-11 (Cancelled)

12. (New) A process for producing polypropylene having increased melt strength comprising irradiating polypropylene in pellet form in the presence of air with an electron beam having an energy within the range of 0.5 to 25 MeV delivered by an accelerator having a power within the range of 50 to 1000 kW and with a radiation dose within the range of 10 to 120 kGray.

13. (New) The process according to claim 12 wherein said polypropylene is irradiated with an electron beam having an energy within the range of 5 to 10 MeV.

14. (New) The process according to claim 12 wherein the accelerator has a power within the range of 120 to 600 kW.

15. (New) The process according to claim 12 wherein the total radiation dose is within the range of 40 to 100 kGray.

16. (New) The process according to claim 12 wherein said polypropylene is a propylene homopolymer.

17. (New) The process according to claim 12 wherein said polypropylene is a copolymer of propylene and at least one comonomer.

18. (New) The process according to claim 17 wherein said comonomer is ethylene, a C₄ – C₁₀ olefin or a C₄ – C₁₀ diene.

19. (New) A process for producing polypropylene with improved melt strength, comprising:

- (a) extruding a polypropylene fluff under nitrogen to produce polypropylene extrudates;
- (b) arranging the polypropylene extrudates in an air atmosphere on a continuously moving conveyor that passes under an electron beam;
- (c) irradiating the polypropylene under air with said electron beam at an energy within the range of 0.5 to 25 MeV and with a radiation dose within the range of 10 to 120 kGray;
- (d) re-extruding the polypropylene in an extruder in the presence of an antioxidant additive under a nitrogen atmosphere to produce reextrudates; and
- (e) granulating said reextrudates and packaging said granulated reextrudates under an air atmosphere.

20. (New) The process of claim 19 wherein said antioxidant additive is added to said extruder initially with the addition of said polypropylene or at a subsequent point along the length of the extruder.

21. (New) The process of according to claim 19 wherein said extrudates are pellets.

22. (New) The process according to claim 19 wherein said extrudates are chopped strands of said polypropylene.

23. (New) The process according to claim 19, wherein subsequent to subparagraph (c) and prior to subparagraph (d), thermally treating the irradiated extrudates at a temperature

below the melting point of said polypropylene in order to kill any free radicals prior to reextrusion in accordance with subparagraph (d).

24. (New) The process according to claim 19 wherein the electron beam has an energy within the range of 5 to 10 MeV.

25. (New) The process according to claim 19 wherein the total radiation dose is within the range of 40 to 100 kGray.

26. (New) The process according to claim 19 wherein the radiation dose is delivered during a plurality of passes of said polypropylene under the electron beam.

27. (New) The process according to claim 19 wherein during said irradiation the polypropylene is conveyed past the electron beam at a speed within the range of 0.5 to 20 m/min.

28. (New) The process according to claim 19 wherein the time elapsed between the irradiation and the second extrusion is of from a few minutes to several weeks at a temperature of the order of 25 °C.

29. (New) The process of claim 19 wherein said extrudates are pellets which are arranged in a uniform layer on said conveyer.

30. (New) The process according to claim 19 wherein said extrudates are packaged in a plurality of bags which are disposed on said conveyer.

31. (New) The process according to claim 19 wherein said polypropylene fluff is extruded under nitrogen in the absence of antioxidant additives.